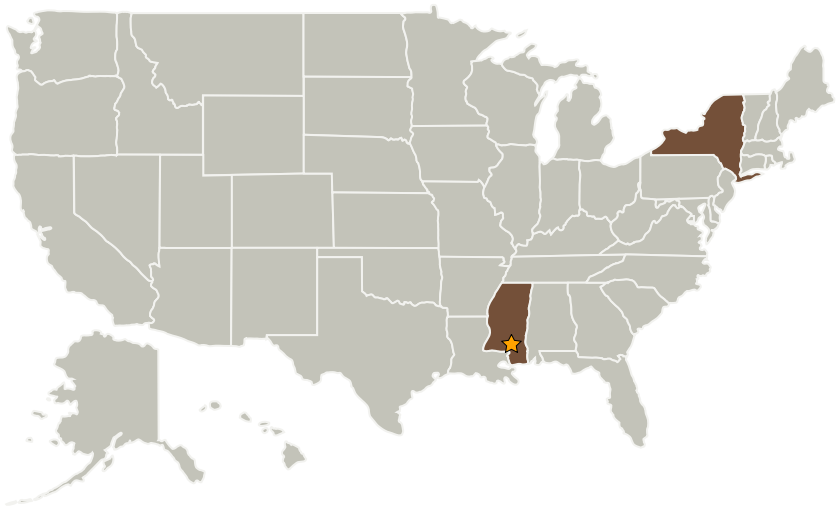
Energy Based Acoustic Measurement Senors, Phase I

Completed Technology Project (2005 - 2006)

Project Introduction

This research focuses on fully developing energy density sensors that will yield a significant benefit both for measurements of interest to NASA, as well as for general acoustic measurements. Previous research has developed prototype energy density sensors. The Phase I research will focus on developing effective calibration techniques for these probes, testing and validating the probes to identify the most effective design, developing a software interface to facilitate user-friendly data acquisition, and developing software to measure acoustic directivity and sound power using the energy density sensors. An initial feasibility study will also be carried out to investigate high-temperature, high-pressure designs that are suitable for NASA needs. Phase II research objectives extend the use of these sensors to measure source directivity and sound power. Energy propagation will be determined from these measurements. A major Phase II focus will be the development of a high-temperature, high-pressure design for the energy density sensor, as well as investigating nonlinear effects on these energy-based measurements. NASA applications of the technology include characterizing radiation from rocket plumes to better understand the mechanisms involved and to match numerical codes. Non-NASA applications are many, including such tasks as in-situ measurement of sound power and radiation characteristics of sources.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Stennis Space Center (SSC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Stennis Space Center(SSC)	Lead Organization	NASA Center	Stennis Space Center, Mississippi
STITechnologies, Inc.	Supporting Organization	Industry	New York

Primary U.S. Work Locations	
Mississippi	New York

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Razvan Rusovici

Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.5 Radiation
    - TX06.5.5 Monitoring Technology